CH-314 Structural Analysis
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Jigsaw 2C

1. [From Past Exams] Determine if each statement is true or false. If false, correct the statement to make it true.

    a. NMR spectroscopy uses infrared pulses to flip nuclear spins.

    b. A more shielded proton will resonate at a higher ppm value.

    c. ^{13}C spectra with ^{1}H decoupling are more sensitive than without decoupling.

    d. Fourier transformation converts the time domain into the frequency domain.

    e. Multiplet splitting patterns are caused by scalar couplings.

    f. Increasing the magnetic field will result in a larger separation of peaks within multiplets in ppm.

2. [Hore Section 2.2] How many different signals will you see in a ^{1}H spectrum in the following molecules? *See also: Jigsaws 2A.1, 2B.3, 2D.1, and 2E.1.*

    a. $CH_3CBrHCH_3$

    b. $CH_3C(O)NH_2$

    c. 1,2-dichlorobenzene

    d. $CH_2FCH_2CHCHCH_2CH_3$

3. [Hore Section 2.3] Two students prepared each an NMR tube of ethanol in deuterated chloroform. The first one used 1 mM of ethanol, the second student used 100 times that concentration. Apart from the difference in intensity, will they obtain the same proton spectrum? Why or why not?